The Implications of Amputees Being Overweight

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Abstract
Over the last 20 years, obesity in the U.S. has risen to alarming levels. The Centers for Disease Control and Prevention (CDC) reports that 60 percent of Americans are overweight. The latest information from the National Center for Health Statistics shows that 30 percent of adults 20 years old or older are obese. That's over 60 million people! The average weight of American men is up to 191 pounds from 160 pounds in 1960. The average weight for women is now 164 pounds, up from 140 pounds. This weight gain trend has also established its presence in the amputee population. Unfortunately, the effects on a person with lower-limb loss are even greater than for someone who is not an amputee.

Orthopedic problems like osteoarthritis have been linked to weight gain. When weight increases, stresses are multiplied exponentially at joint surfaces. This increased stress can lead to joints wearing out prematurely and an early onset of discomfort from degenerative changes associated with osteoarthritis. Joint replacement may be needed at younger ages in obese individuals. Wearing a prosthesis can place an unusual amount of stress on the joints, specifically the knee and the hip. These are already common sites for joint replacement. It can also place extra stress on the contralateral (opposite) side because many amputees favor their opposite side in standing, pivoting and stair climbing.

Cardiovascular issues for an amputee are also exponentially increased. Obesity causes increased cardiac demand as more tissue requires increased collateral circulation, all driven by the heart. Exercise is already more difficult in terms of energy expenditure for an amputee. Excess weight compounds the orthopedic and cardiovascular effects on an amputee. It has been shown that it is 40 to 100 percent more metabolically demanding to walk with transtibial (below-knee) amputation(s) and 90 to more than 200 percent more metabolically demanding to walk with transfemoral (above-knee) amputation(s). The already overtaxed cardiovascular system of a person with leg amputation doesn't need the additional burdens associated with obesity.

Conclusion
A recent study estimates the average caloric intake of an American at 3,900 calories a day. No wonder there is a problem with obesity in this country, when the suggested amount is no more than 2,000- 2,500 calories a day. Before you go on a diet or change your health habits (to lose weight, initiate exercise, etc.), you should always consult your physician. There are many effective programs available, but, again, we recommend consulting with your physician to determine the best options for you. Another important consideration is that many amputees have other health problems (e.g., diabetes, hypertension or peripheral vascular disease) that may require special, medically supervised diets. Other than dieting, the best way to expend more calories is to exercise. We know that it's difficult to exercise when you're an amputee, especially if you're already overweight or obese, but you have to start somewhere – otherwise, you will be destined to always battle the adverse effects of being overweight such as those discussed here. Many physical activities can be performed that don't require vigorous activity or high impact on your body and your residual limb. Examples of the impact of physical activity on calorie burning are listed in Table 2.

Limb loss inherently brings additional burdens on many fronts. Our intention here was to bring insight to the additional complications that being overweight or obese adds to lower-limb amputation and prosthetic wear. Furthermore, we wish to point out that physical activity brings satisfaction and enjoyment to many people, regardless of physical ability, skill level and body weight. Talk to your healthcare provider, set a goal, get a workout/exercise partner, and start changing your life one calorie, one step, one day at a time.

Table 2

Calories Expended (Burned) per Hour in Common Physical Activities

Physical Activity	Approximate Calories Burned per Hour for 154-lb. Person
Bicycling (<10 mph)	290
Bicycling (>10 mph)	590
Dancing	330
Golf (walking and carrying clubs)	330
Heavy Yard Work (chopping wood)	440
Hiking	370
Light C	
Stretcl	
Swimr	
Walkir	
Walkir	
Weigh	
Weight Lifting (vigorous effort)	440

Calories burned per hour will be higher for people who weigh more than 154 lbs and lower for people who weigh less. Source: CDC Web site, adapted from *Dietary Guidelines for Americans 2005*

Figure 1. The transtibial socket on the left shows how the intimate relationship between the socket and the anatomy provides a “bony lock.” The socket on the right shows that when someone is obese, there is more room between the socket and the anatomy, reducing support and stability.